

WHAT IS CLAIMED IS:

1. A shooting apparatus which images a subject light on an image pickup element to produce an image signal, comprising:

5 a lens barrel which incorporates, therein, a shooting lens comprising a plurality of lens groups, a length of the lens barrel can be changed between an accommodated state having a relatively short barrel length and a shooting state having a relatively long barrel length, wherein

10 the lens barrel comprises:

a lens retracting mechanism which allows at least one of the lens groups to retract from a shooting optical axis when the lens barrel is brought into the accommodated state, and which allows the retracted lens group to advance to the shooting  
15 optical axis when the lens barrel is brought into the shooting state; and

a light amount control member which is in a using state in which an amount of shooting light passing through the shooting lens is controlled when the lens barrel is in the  
20 shooting state, and which is in non-using state in which an opening is left opening at a predetermined opening diameter when the lens barrel is in the accommodated state, and which receives at least one of the lens groups in the opening when the lens barrel is in the accommodated state.

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2. The shooting apparatus according to claim 1, wherein the shooting lens comprises three lens groups, i.e., a front lens

group, a rear lens group and a focus lens arranged in this order from forward in the optical axis direction, a focal length can be changed, and a focus is adjusted by moving the focus lens.

5 3. The shooting apparatus according to claim 2, wherein the light amount control member is fixed to a rear lens group guide frame which defines a position of the rear lens group in the optical axis direction,

the lens retracting mechanism retracts the focus lens  
10 from the shooting optical axis when the lens barrel is brought into the accommodated state, and

the light amount control member receives the front lens group in the opening when the lens barrel is in the accommodated state.

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4. The shooting apparatus according to claim 2, wherein the light amount control member is fixed to a rear lens group guide frame which defines a position of the rear lens group in the optical axis direction,

20 the lens retracting mechanism includes a rear lens group holding frame which holds the rear lens group and is rotatably supported by the rear lens group guide frame, the rear lens group holding frame is turned to retract the rear lens group from the shooting optical axis when the lens barrel is brought into the  
25 accommodated state, and

the focus lens is received in the opening of the light amount control member when the lens barrel is in the

accommodated state.

5. The shooting apparatus according to claim 1, wherein  
the light amount control member is biased by a spring in  
5 a direction away from a rear lens group guide frame which defines  
a position of the rear lens group in the optical axis direction,  
and is supported by the rear lens group guide frame,

the lens retracting mechanism retracts the focus lens  
from the shooting optical axis when the lens barrel is brought  
10 into the accommodated state, and

the light amount control member is pushed toward the rear  
lens group guide frame and the rear lens group is received in  
the opening of the light amount control member when the lens  
barrel is brought into the accommodated state.

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6. A shooting apparatus which images a subject light on an  
image pickup element to produce an image signal, comprising:

a lens barrel which incorporates, therein, a shooting  
lens comprising a plurality of lens groups, a length of the lens  
20 barrel can be changed between an accommodated state having a  
relatively short barrel length and a shooting state having a  
relatively long barrel length, wherein

the lens barrel comprises:

a lens retracting mechanism which allows at least one of  
25 the lens groups to retract from a shooting optical axis when  
the lens barrel is brought into the accommodated state, and  
which allows the retracted lens group to advance to the shooting

optical axis when the lens barrel is brought into the shooting state; and

a light amount control member which is in a using state in which an amount of shooting light passing through the shooting lens is controlled when the lens barrel is in the shooting state, and which is in non-using state in which an opening is left opening at a predetermined opening diameter when the lens barrel is in the accommodated state, and which receives the image pickup element in the opening when the lens barrel is in the accommodated state.

7. The shooting apparatus according to claim 6, wherein the shooting lens comprises three lens groups, i.e., a front lens group, a rear lens group and a focus lens arranged in this order from forward in the optical axis direction, a focal length can be changed, and a focus is adjusted by moving the focus lens,

the light amount control member is fixed to a rear lens group guide frame which defines a position of the rear lens group in the optical axis direction, and

the lens retracting mechanism retracts the focus lens from the shooting optical axis when the lens barrel is brought into the accommodated state.

8. The shooting apparatus according to claim 1, wherein the light amount control member is a lens shutter.

9. The shooting apparatus according to claim 6, wherein the

light amount control member is a lens shutter.

10. The shooting apparatus according to claim 1, wherein the light amount control member is an aperture member.

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11. The shooting apparatus according to claim 6, wherein the light amount control member is an aperture member.

12. The shooting apparatus according to claim 1, further comprising an interfering member which interferes with the light amount control member to maintain the light amount control member in the non-using state when the lens barrel is in the accommodated state.

15 13. The shooting apparatus according to claim 6, further comprising an interfering member which interferes with the light amount control member to maintain the light amount control member in the non-using state when the lens barrel is in the accommodated state.

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14. A lens barrel incorporating, therein, a shooting lens comprising a plurality of lens groups, in which a length of the lens barrel can be changed between an accommodated state having a relatively short barrel length and a shooting state having a relatively long barrel length, the lens barrel comprising:

25 a lens retracting mechanism which allows at least one of the lens groups to retract from a shooting optical axis when

the lens barrel is brought into the accommodated state, and which allows the retracted lens group to advance to the shooting optical axis when the lens barrel is brought into the shooting state; and

5           a light amount control member which is in a using state in which an amount of shooting light passing through the shooting lens is controlled when the lens barrel is in the shooting state, and which is in non-using state in which an opening is left opening at a predetermined opening diameter when  
10   the lens barrel is in the accommodated state, and which receives at least one of the lens groups in the opening when the lens barrel is in the accommodated state.

15           15. The lens barrel according to claim 14, wherein the shooting lens comprises three lens groups, i.e., a front lens group, a rear lens group and a focus lens arranged in this order from forward in the optical axis direction, a focal length can be changed, and a focus is adjusted by moving the focus lens.

20           16. The lens barrel according to claim 15, wherein the light amount control member is fixed to a rear lens group guide frame which defines a position of the rear lens group in the optical axis direction,

            the lens retracting mechanism retracts the focus lens  
25   from the shooting optical axis when the lens barrel is brought into the accommodated state, and

            the light amount control member receives the front lens

group in the opening when the lens barrel is in the accommodated state.

17. The lens barrel according to claim 15, wherein  
5 the light amount control member is fixed to a rear lens group guide frame which defines a position of the rear lens group in the optical axis direction,

the lens retracting mechanism includes a rear lens group holding frame which holds the rear lens group and is rotatably  
10 supported by the rear lens group guide frame, the rear lens group holding frame is turned to retract the rear lens group from the shooting optical axis when the lens barrel is brought into the accommodated state, and

the focus lens is received in the opening of the light  
15 amount control member when the lens barrel is in the accommodated state.

18. The lens barrel according to claim 14, wherein  
20 the light amount control member is biased by a spring in a direction away from a rear lens group guide frame which defines a position of the rear lens group in the optical axis direction, and is supported by the rear lens group guide frame,

the lens retracting mechanism retracts the focus lens from the shooting optical axis when the lens barrel is brought  
25 into the accommodated state,

the light amount control member is pushed toward the rear lens group guide frame and the rear lens group is received in

the opening of the light amount control member when the lens barrel is brought into the accommodated state.

19. A lens barrel incorporating, therein, a shooting lens comprising a plurality of lens groups, in which a length of the lens barrel can be changed between an accommodated state having a relatively short barrel length and a shooting state having a relatively long barrel length, the lens barrel comprising:

an image pickup element which produces an image signal when the shooting lens images a subject light;

a lens retracting mechanism which allows at least one of the lens groups to retract from a shooting optical axis when the lens barrel is brought into the accommodated state, and which allows the retracted lens group to advance to the shooting optical axis when the lens barrel is brought into the shooting state; and

a light amount control member which is in a using state in which an amount of shooting light passing through the shooting lens is controlled when the lens barrel is in the shooting state, and which is in non-using state in which an opening is left opening at a predetermined opening diameter when the lens barrel is in the accommodated state, and which receives the image pickup element in the opening when the lens barrel is in the accommodated state.

20. The lens barrel according to claim 19, wherein the shooting lens comprises three lens groups, i.e., a front lens



group, a rear lens group and a focus lens arranged in this order from forward in the optical axis direction, a focal length can be changed, and a focus is adjusted by moving the focus lens,

the light amount control member is fixed to a rear lens  
5 group guide frame which defines a position of the rear lens group in the optical axis direction, and

the lens retracting mechanism retracts the focus lens from the shooting optical axis when the lens barrel is brought into the accommodated state.

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21. The lens barrel according to claim 14, wherein the light amount control member is a lens shutter.

22. The lens barrel according to claim 19, wherein the light  
15 amount control member is a lens shutter.

23. The lens barrel according to claim 14, wherein the light amount control member is an aperture member.

20 24. The lens barrel according to claim 19, wherein the light amount control member is an aperture member.

25. The lens barrel according to claim 14, further comprising an interfering member which interferes with the light amount  
25 control member to maintain the light amount control member in the non-using state when the lens barrel is in the accommodated state.

26. The lens barrel according to claim 19, further comprising  
an interfering member which interferes with the light amount  
control member to maintain the light amount control member in  
5 the non-using state when the lens barrel is in the accommodated  
state.